DOCUMENT RESUME

ED 328 046 EC 300 011

AUTHOR Kluwin, Thomas N.; Kelly, Arlene Blumenthal
TITLE Implementing a Successful Writing Program for Deaf Students in Public Schools. Progress Report #3. National Research to Development Network for Public School Programs for the Hearing Impaired.
INSTITUTION Gallaudet Research Inst., Washington, DC.
PUB DATE Apr 90
NOTE 25p.; For report #1, see EC 300 010.
PUB TYPE Reports - Evaluative/Feasibility (142) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Deafness; Dialog Journals; Elementary Secondary Education; Feedback; Inservice Teacher Education; *Instructional Effectiveness; Postsecondary Education; Program Effectiveness; Student Improvement; *Teaching Methods; Training; Writing (Composition); Writing Improvement; *Writing Instruction; Writing Processes

ABSTRACT

To remedy the English composing problems of young deaf writers, 43 teachers were trained to teach writing as a process in a 2-year intervention program. Teacher workshops focused on developing a rationale for writing instruction, teaching writing as a process rather than as a product, promoting writing through dialogue journal writing, using specific rationales in the selection of writing topics, and providing clear and useful feedback to students about their compositions. To assess the program's effectiveness, students were administered writing tests (descriptive and persuasive essays and business letters) and teacher logs were analyzed. It is concluded that teaching writing as a process resulted in improvements in the writing of deaf students. Students became more fluent in their writing when the teacher's focus was not on the quality of the product and there were specific steps students could take to improve their compositions. An appendix contains scoring guides. (19 references) (JDD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED328046

National Research to Development Network for Public School Programs for the Hearing Impaired

PROGRESS REPORTS

Report #3 April, 1990

Implementing a Successful Writing Program for Deaf Students in Public Schools

Thomas N. Kluwin
Arlene Blumenthal Kelly

Gallaudet Research Institute
Gallaudet University
Washington, DC 20002

EC 300011

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY
Thomas N. Kluwin
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Implementing a Successful Writing Program for Deaf Students in Public Schools

Thomas N. Kluwin
Arlene Blumenthal Kelly

Gallaudet University

April, 1990

INTRODUCTION

The difficulties that young deaf writers have with writing English are well documented in a history that goes back several decades (Heider & Heider, 1940; Kluwin, 1979; Stuckless & Birch, 1966; Taylor, 1969; Thompson, 1936; Walter, 1955). Parallel to this history of deaf children's poor writing skills there has been an extensive research history on the process of writing, both as a theoretical construct as well as a curricular innovation (Applebee, 1984; Hillock, 1987; Humes, 1983). While there has been to date almost no research on the writing processes of deaf writers, some of the research on less able writers suggests that differences in the composing process may be at the heart of some of the writing problems reported for deaf populations.

Humes (1983) summarizes the previous research on composing as a process by dividing composing into four sub-processes: planning, translating, reviewing, and revising. It is the quality of the goal setting that is one of the initial differences between able and less able writers. Better writers create a complex network of goals and subgoals which in turn not only control but generate content. Selfe (1981) reported in a modified case study of eight students that differences occurred at this stage between apprehensive and non-apprehensive writers. The apprehensive writers approached their tasks with anxiety and rushed through them without planning what they would write.

Translating is the transformation of mental representations of meaning into physical representations or to put it more simply "drafting". Recent research on young deaf children suggests that translating differences may account for surface "errors" in their writing (Mather, 1989).

Individual differences are apparent during reviewing, the process of going back over what has been written to determine if the previously established goals have been met (Benton and Blohm, 1986; Daiute, 1986). The biggest difference between able and less able writers at this stage is not the pacing of review but the subject of the review. More able writers temporarily ignore errors and rethink the structure of the composition. Less able writers do not focus on structure, purpose or audience but instead merely monitor for errors. This reviewing is ineffective because the less able writer appears to read what he or she intended to write and not what actually appears on the page.

Revising, which should include editing as well as major reorganizations of the composition is different between less able and able writers (Humes, 1983). The difference during this sub-process is that the able writer views revising as a process of structuring and shaping the content to fit with the requirements of the audience. The less able writer merely changes individual words or grammatical errors (Humes, 1983). Livingston (1989), in a study of the changes made by deaf students to narratives shared on a computer system, found that the young deaf writers showed similarities and differences with less able hearing writers. The similarity to the less able hearing writers was that the young deaf writers engaged in surface word changes or re-phrasings of entries to respond to teachers' inquiries for clarification rather than any major restructuring of the text. The deaf writers tended to make surface changes by adding or substituting words rather than through deletions as was characteristic of less able hearing writers.

Overall, writing as a process is not a linear sequence of steps but rather a recursive process which has identifiable sub-processes. This approach to writing both as theory (Humes, 1983) and as pedagogy (Applebee, 1984) has a considerable and successful tradition. The goal of our project was to train a

group of teachers of the deaf to employ this method with their students in order to improve the writing ability of those students.

Hillocks (1987), while reviewing the previous twenty years of writing research, came to some very specific conclusions about the effects of such an intervention. Hillocks, after reviewing some 2,000 studies, reported that research on using editing skills such as grammar and mechanics as the primary focus of writing instruction had a negative effect on outcomes. Writing programs which focussed on a study of writing as "products" were more effective but not as effective as forms of writing instruction that focussed on the production of discourse or on activities that foster the production of discourse such as planning or organizing.

In a large scale study, Baxter and Kawlick (1984) reported that the writing of 1,029 high school students improved after only fifteen weeks of instruction using a process approach to composing. They reported "contradictory" results in that holistic scores for papers had increased but at the same time there was an increase in the number of grammatical errors made by the students. Hernandez (1987) in a less extensive study of 30 fifth grade students who were involved in a 36 week writing program using the process approach to teaching writing, did note differences in impressionistic scores of papers over this short time period. Davlin and Riggle (1987) examined the effects of the process writing approach on the writing skills of 73 eighth graders. Using a pre-test/ post-test model, they reported that writing skills did improve. Working with 48 high school students in a one semester project, Moriarity (1978) reported that instruction in any component of the writing process led to an improvement in compositions that were rated impressionistically. While Moriarity's study is flawed by a possible "Hawthorne" effect, it does fit into the regular pattern of findings for this kind of evaluation. Working with college-aged students, Clifford (1981) reported that a modified process approach was successful in an experimental/ control group study. Covarying for initial between group differences, Clifford reported that there were significantly greater gains in the holistic scores of the students, but no differences were found in their knowledge of the mechanics of writing or their use of the mechanical conventions of writing.

If one expands beyond the limitation of looking at formal evaluations of the implementation of process approaches to writing into "research" on composing, Knudson's (1988) recent study of the degree of structure in writing lessons offers some insight into how process oriented approaches may actually work. Knudson (1988) studied the writing of 137 second through sixth grade students during a ten week instructional experiment. Her variable of interest was the degree to which the teacher offered "substantive facilitation" or the entry of the teacher into the writing task as a collaborator. Knudson used a writing conference where the teachers helped the student select a topic as an example of substantive facilitation. In her study, she compared the effectiveness of process writing approaches with and without substantive facilitation. On virtually every measure of writing skill that she used, she found that the students who got less substantive facilitation performed better than those who got more substantive facilitation. She goes on to argue that the reason that some of the evaluations of the process approaches to writing instruction have failed is that although the teachers may have known how to teach writing as a process, they in fact used a high degree of substantive facilitation which would negate the effects of having students think through the writing process. In other words, process approaches to writing instruction are

effective in that they promote the thinking process of the individual student.

Humes (1983) also offers a possible explanation for the differential effects of process approaches to writing instruction. In her review of the research in this area, she comments that the biggest impact of this type of composing is in the area of planning with considerably less emphasis in the area of translating or the putting of words to paper. In addition, the bulk of revision activities for those who are successful in this type of composition instruction is found in the areas of conceptual restructuring and responding to audience interests. Less explicit emphasis is placed theoretically and in fact on revision of formal aspects of the composition.

A consideration of the evaluation history of process approaches to teaching writing suggests three general findings. First, the reported studies regularly cite positive effects for this approach when holistic or impressionistic scoring is employed, even for relatively short periods of instruction. Second, these approaches report very mixed results in the improvement of specific grammatical or mechanical skills. Third, we have some information about using process approaches with learning disabled writers but none for the use of the procedure with deaf writer. That is not to say that the approach has not been used with deaf writers,but rather, there are no formal evaluations of these attempts using student writing as an outcome measure.

To remedy the English composing problems of young deaf writers, we conducted a two year intervention program in public school programs by training teachers to teach writing as a process. We assumed that, the method would be generally effective in improving the overall quality of students' compositions.

METHOD

Teacher Training

43 teachers with an average of 10 years of teaching experience participated in the project. 40% of the teachers had Master's degrees; 31% had graduate work beyond the Master's degree; and the remaining quarter had only Bachelor's degrees. 82% of the teachers had permanent certificates as teachers of the deaf; three were certified to teach English and seven were certified to teach secondary level classes. One participant teacher identified herself as hard of hearing and two identified themselves as deaf.

During the two years of the project, two separate workshop sequences were conducted for the teachers of the deaf involved in this project both on and off the Gallaudet University campus. The first-year workshops focussed on developing a rationale for writing instruction, teaching writing as a process rather than as a product, and the promotion of writing through dialogue journal writing.

The point of the second-year workshops was threefold: to review the first year's training goals with an emphasis on a clearer definition of the goals of a writing program, to learn to use specific rationales in the selection of writing topics, and to learn how to provide clear and useful feedback to the students about their compositions. The participants were trained in how to express non-judgmental acceptance of the content of students' writing while discussing revisions to the form and how to create classroom dialogue about form as a means to convey content in a specific fashion. Two forms of feedback were stressed during the second year. First, the teachers were given additional training in the preparation of scoring guides. Second, the face to face writing conference was introduced as a technique to provide feedback.

Sample

This was a quasi-experimental study of the implementation of a teaching method, consequently, the movement of students into and out of the project was not controlled for. As a result, four types of student groups emerged naturally as the project went along:

1. those students who started the project but left after one year.

2. those students who entered the project at the start of the second year.

3. those students who were in both years of the project but who changed teachers from Year 1 to Year 2. Some of these students formed a subgroup of students who changed teachers to a teacher who was a replacement for the second year of the project.

4. those students who kept the same teacher for both years of the project.

Because of this difference in the degree of participation, the variable, exposure to instruction, was defined as having four values for the definitions presented above. The movement of students in and out of the project had no apparent trend, but was a function of changes resulting from local school conditions.

Table 1 Here.

Some systematic differences could be seen among the four groups. "Group 2" was considerably younger than any of the other three groups. The difference in age between "Group 3" and "Group 4" was not significant. The gender differences did not appear to be substantial, yet, the number of minority group students was considerably higher in "Group 4". "Group 3" had more students with a more severe hearing loss than the other groups. "Group 1" had a reading level which was significantly lower than that of the other three groups. This group was also the most difficult to collect post-test forms from since we did not know they were out of the project until the fall of the following year. As a result, they were not used in later comparative analyses. On the whole there were a number of random but significant differences amongst the four groups. These differences will be compensated for in later analyses by adjusting statistically for the differences in age, race, hearing loss, and initial writing ability.

Instrumentation

Demographic Information. Through the permission of the parents of the students in the study and the cooperation of the schools and the Center for Assessment and Demographic Studies, background information on the students was obtained. This included the date of birth, sex, race, degree of hearing loss, etiology, and onset of deafness for each child. In addition, through the schools' records the students' current reading achievement scores were obtained. This information was presented above in Table 1.

Writing Assessment. During the fall of 1987, each of the students in the project was scheduled to be given the descriptive, persuasive, and business letter test stimuli appropriate to his or her age level that had been developed by the Educational Testing Service for use by the National Assessment of Educational Progress (Mullis, 1981). Table 2 shows the schedule.

Table 2 Here.

The tests were administered locally by the school teachers in the project and returned by mail to the research team. Students were allowed as much time as needed but generally completed each test within half an hour. With the exception of one teacher who encouraged students to re-write their essays, all of the essays were the product of a single draft. The test administrators were told to encourage the children to write and to explain to the students what was expected but not

to tell them what or how to write. The stimulus was provided to the students in print and was read to them using total communication.

The process was repeated again in the spring of 1989.

Teacher Logs. In order to have a system to monitor the implementation of writing instruction, a log system was developed which requested information about the quantity and difficulty of the writing the students were doing. Requested information included a description of the books used, pages covered, and amount of classwork and homework. A monthly chart was provided on which the teachers would estimate what portion of their class time was devoted to a specific activity in fifteen minutes increments.

The purpose of the coding system was to gather estimates of the following measures of writing instruction:

Number or percentage of days devoted to writing instruction.

Number or percentage of hours devoted to writing instruction.

Total number of assignments or paragraphs written.

There were six categories of writing instruction to be coded: dialogue journal writing, prewriting or organizing activities, writing in class, revision activities, publishing or any class time devoted to the production of material in a finished form, and other writing activities.

ANALYSIS

Essay Scoring

Several different scoring systems were used. For the persuasive and descriptive essays, counts were made of the number of words, the number of sentences, the number of clauses, both grammatical and ungrammatical, and the number of t-units. Words and sentences were defined orthographically while t-units were defined as a main verb clause and any subordinate clauses. Grammatical clauses were defined as complete verbs with their subjects and subordinating or coordinating conjunctions if appropriate. If a group of words functioned as a clause in a sentence but lacked a major element such as a complete verb or an appropriate subordinate conjunction, it was counted as an ungrammatical clause. An explanation of the counting system is provided in the appendix.

The persuasive and descriptive essays were also coded using a holistic scoring system. It was a six point system ranging from outstanding papers to barely comprehensible papers. A seventh category was used when the paper was comprehensible but off the topic which happened more with the persuasive essays than with the descriptive essays. The operational definitions of one of these scales is provided in the appendix.

The business letters represented a distinct type of writing from the persuasive and descriptive papers, so two different types of scoring systems were used. Because of variations in missing information in the business letter, an individual feature analysis system was developed which counted the presence or absence of specific pieces of information such as the greeting, the internal address or the closing. Two primary categories were used: form and content. The form categories included the internal address, date, greeting, writer's name, return address, and closing. The contents were coded for a reference to the calendar, a request for the item, statement of a specific choice, and the addition of extraneous information. In addition, there were specific content requirements for the effective communication about the topic. The writer had to mention a particular item, to request that the item be sent, and to provide information as to where to send it. The coding system

only involved a checking of the presence of key words or phrases. An explanation of this system is also provided in the appendix.

Because the business letters were so brief, it was not practical to do grammatical counts on them. Instead they were evaluated using a six point primary trait scoring system which rated them as being virtually free of grammatical or mechanical errors to having substantial deletions of major syntactic elements and a failure to observe orthographic conventions. A seventh category was used which indicated that the letter was too brief to be evaluated.

In the case of all of the three impressionistic scoring systems, the holistic scoring system for the descriptive essay, the holistic scoring system for the persuasive essay, and the primary trait rating system for the grammaticality of the business letter, the same general scoring procedure was followed. Before scoring, the scoring system was explained to two readers. The criteria and the anchor papers were discussed, and 20 papers were practiced-scored in groups of five to develop reliability. This process was repeated until the level of reliability described below was achieved.

During the scoring session, each reader assigned a score of from 1 to 6 to a paper. If the two scores were within 1 point of each other, they were accepted as in agreement. The score for the paper was the sum of the two readers' scores. In the event of a disagreement, the referee "pulled" the paper to discuss the discrepancy and to attempt to re-establish reliability. However, the readers usually did not differ by more than one point on any paper after training. Consequently, discrepant scores occurred less than 3% of the time. When the readers were consistent with each other and the criteria, they then scored blocks of 20 papers each in order to check consistency with the referee.

As was said above, five types of information were counted on the descriptive essays and on the persuasive essays: total words, total sentences defined orthographically, total t-units, total grammatically correct clauses, and total semantic clauses. From these counts, three measures of syntactic complexity were computed: words per clause, words per t-unit, and clauses per t-unit for both the descriptive essay and for the persuasive essay. Per sentence measures were considered and then discarded due to the fact that the sentence as defined in this study was essentially an orthographic rather than a syntactic convention. The t-unit and the clause were more strictly syntactic measures per the definitions used in this study. The holistic score for the grammaticality of the business letter was included as an additional measure of grammatical skill.

Since there were six measures of grammatical complexity for the pre-test papers including the measure of syntactic error for the descriptive and persuasive pre-test essays, and the primary trait grammatical rating for the pre-test business letter, a factor analysis was computed to reduce the number of variables, the factor analysis yielded two factor scores.

Table 3 Here.

Factor 1 (Grammatical Complexity) was a measure of syntactic complexity and general grammatical accuracy in that it consisted of the t-units per clause variables, the overall quality rating for the grammaticality of the business letter, and the syntactic complexity measures for the descriptive essay. Factor 2 (Persuasive Essay Measure) was a measure of syntactic complexity primarily for the persuasive essay. Factor 1 was selected as the more global description of grammatical complexity since it included the greater range of writing settings and measures.

To create post-test scores, the factor loadings for the pre-test Factor 1 were

used as weights in computing the post-test factor scores for syntactic complexity.

As was said above, it was difficult to come up with a consistent holistic or primary trait score for the business letters because of the unevenness of the missing information. Consequently, scorers coded the business letters for the presence or absence of specific information. To generate trait scores for the business letter, the scores for the business letter form and content categories were factor analyzed.

Table 4 Here.

Factor 1 (Content Mastery) included all of the content measures and the essential information of the return address. Scoring well on this trait would mean that the individual would receive the product described in the stimulus while a low score would mean that one would not get the product. Factor 2 (Formal Mastery) included the formalism of the internal address and the date as well as the return address and the name. Factor 3 (Social Mastery) included the elements which were descriptive of a social letter as well as of a business letter while the categories in the other factors seemed more unique to business letters. Factor 3 also contained a large loading for extraneous information.

Factor scores for both the pre-test and the post-test were computed for these three factors for all of the subjects.

To develop a composite quality measure as opposed to a measure of grammatical complexity, the holistic score for the descriptive pre-test and the persuasive pre-test were factor analyzed along with the three pre-test factor scores for the business letter.

Table 5 Here.

Factor 1 (Composite Quality Score) consists of the persuasive holistic score and the descriptive holistic score as well as the business content mastery score and to a lesser extent the business form mastery score. The business social mastery score was really a major component of the second factor. Only the first factor, the composite quality score, was used in further analyses.

Evaluation Questions

First, what evidence was there that the teachers actually taught in the way they were trained?

The teachers in the project kept logs of their teaching activities during the two years of the project. While this process was not completely successful in the sense that there was 100% cooperation or that this was a completely valid way of monitoring the progress of the implementation of the teacher training, it did offer an inexpensive check on the impact of the training.

Teachers reported the number of minutes they spent in writing instruction during the day. On the average about 40% of all available class time was devoted to teaching writing.

During the first year of the project, the average amount of time per month devoted to writing across all classes was 5.49 hours with a standard deviation of 3.85 hours. Senior high school classes devoted the largest amount of time to writing instruction: 5.85 hours per month (s.d. = 3.93 hours per month). Junior high classes (mean = 4.93 hours per month; s.d. = 2.71) and the middle grades (mean = 5.09 hours per month; s.d. = 4.2) devoted the least amount of time to writing instruction .

During the first year of the writing project, 22.21 minutes per day were devoted on the average to the teaching of writing. The average for the second year of the project was 16.45 minutes per day. Since the standard deviation was small relative to the means (9.36 for the first year and 7.90 for the second year) for both years, there was substantially less time devoted to writing instruction during the second year.

The variability in the time estimates led us to divide the teachers into three groups on the basis of how much time they devoted to writing everyday.

Minimal writing time:
Average of 9 minutes per day (5 teachers)
Reasonable writing time:
Average of 18 minutes per day (24 teachers)
Unusual amounts of writing time:
Average of 33 minutes per day (15 teachers)

FIGURE 1 HERE

Figure 1 presents the percentage of this amount of time devoted to different categories of writing activities. It was apparent from Figure 1 that regardless of the amount of time the teachers said they were devoting to writing, they were distributing their writing instruction across the three major categories of writing as a process.

We can conclude from a simple inspection of Figure 1 that writing as a process was probably being implemented on the basis of the teacher self-reports.

Second, was instruction effective?

To assess the effectiveness of the project, a repeated measures analysis of variance was computed using two indices of two different measures of achievement and a three level factor. The two measures of achievement were the factor score for the grammar measures and the factor score for the holistic measures that were described above. The two indices were the post-test score and the expected post-test score. The three level factor was the degree of exposure to instruction. The first level of the factor consisted of those students who were only in the second year of the project; the second level of the factor consisted of those students who were in both years of the project but had different teachers; the third level of the factor consisted of those students who had the same teacher for both years of the project.

Two hypotheses were tested. The first was that longer time in instruction and more consistent exposure to instruction would increase achievement. Consequently, it was hypothesized that the students who were only in the second year of the project would have the lowest achievement while those students who had two years of instruction with the same project teacher would have the highest level of achievement. The second hypothesis was that if instruction were effective, the post-test score would be greater than the pre-test score.

To test the first hypothesis, the pre-test factor scores for the overall quality of the composition and for the grammatical complexity of the essays was adjusted for between subjects differences described earlier in this paper. The pre-test scores were adjusted for the students' beginning reading ability as measured by their grade equivalent score, their degree of hearing loss as measured by better ear average, the gender of the student, the age of the student when the data collection was done, and the race of the student.

Table 6 Here.

The equation to adjust the pre-test composite quality score accounted for nearly 60% of the variance. Since these were the variables that appeared to differentiate the groups who participated in the study, but we are confident that we have controlled for sources of variance not related to instruction.

The F value for the analysis of variance for the equation to adjust the grammar pre-test factor score was statistically significant, although only 18% of the variance is accounted for in this equation. What this suggests is that, although there may be between groups differences on demographic variables, these same demographic variables are not substantially related to the

grammatical complexity of the students' writing.

With one addition, the same procedure was used to adjust for between subjects differences on post-test factor scores. Because some of the students had been in the study for only one year while others had been in the study for two years, it was necessary to adjust the post-test results for the amount of time between testing sessions. For the students who were in the study for two years, this was 21 months. For the other students, it was 9 months.

Table 7 Here.

This equation predicted about 60% of the variance in the composite quality score which suggests that the holistic scores were more sensitive to between student differences than the grammar measures.

The multiple regression equation accounted for only a tiny proportion of the variance in the grammar post-test score. Only reading ability was statistically significant while the overall F value for the equation was not.

Figure 2 presents the adjusted pre-test and post-test group means for both the composite quality score and for the grammar complexity score.

FIGURE 2 HERE

To test the hypotheses stated above, a repeated measures analysis of variance was computed using the between subjects factor of instructional group membership -- one year of instruction, two years of instruction with two different teachers, and two years of instruction with the same teacher. The within subjects factors were the time of the testing --pre versus post -- and the measure used to judge progress -- composite quality or grammatical complexity.

Table 8 Here.

There was no statistically significant effect for the main effect of exposure to instruction. That is, in and of itself, time did not contribute to change. A strict interpretation of this result, however, could be misleading since there are two groups with two years of instruction and one group with one year. Since the omnibus F test examines the data for differences between the cells and the grand mean and not between cells, the two similar cells with a large variance on the dimension of exposure to instruction could easily eliminate any effects.

Instruction was effective because the factor that measured the difference between the adjusted pre-test scores and the adjusted post-test scores was statistically significant. There was also a statically significant effect for the type of test. As is apparent from Figure 2, there were no differences between tests or between groups on the adjusted pre-test scores. What occurred as a result of training is a major increase in the length of students' sentence elements, especially the number of words per clause and per t-unit.

The first time that a statistically significant result is identified for the effects of group membership is in the two-way interaction of exposure to instruction and test. The bulk of this effect is traceable to post-test differences. The group that had only one year of instruction showed almost no change between their pre-test composite quality scores and their post-test composite quality scores, however, they showed dramatic improvements in the complexity of their grammar. For the other two groups, those with two years of instruction, the improvement in their grammatical complexity was nearly as great as for the group with only one year of instruction, but their composite quality scores jumped nearly as much. The three way interaction of exposure, time of testing, and type of test is reflected in Figure 2. The source of the three way effect comes primarily from the failure of the group with only one year's instruction to improve their composite quality score.

It seems ridiculous trying to explain

too much of a good thing, however, the large changes in the adjusted grammar scores need some explanation. Similar problems have been noted during a re-analysis of the thirteen year-olds' essays from the National Assessment of Educational Progress (Soltis & Walberg, 1989). The researchers remarked that their result might be artifactual. Something similar may be happening in this data set as well. The discrepancy in results may lie in the nature of the scales that were used. The holistic scores that generated the composite quality score were a discrete, ordinal scale with a range of 12 values. The counts for the grammatical measures had a maximum range of 30 points on a continuous, interval scale. There is more variance between scores for the grammatical measures, thus creating the possibility for greater score differences. What is probably true of these data is that the differences and the directions of the differences are real, but that the degree of discrepancy between measures may be artifactual. In other words, there was a dramatic increase in the grammatical complexity of all of students, especially the students with only one year of instruction, but the magnitude of that change in relation to the change in the composite quality score may not be as great as it appears.

DISCUSSION

It is apparent from our study that teaching writing as a process does result in improvements in the writing of deaf students. What have occurred is that when the teacher's focus was not on the quality of the product and that there were specific steps that the students could take to improve their compositions, the students became more fluent in their writing. The absence of an emphasis on grammatical correctness permitted the students to find their own voices. While this initially improved fluency, it probably did not immediately effect the overall quality of the writing. Two years of instruction were required to produce across the board improvements beyond what would be expected from normal maturation. The degree of this change, however, must remain problematic because of the differences in the scales for the two measures that were used.

Teaching writing as a process did improve the overall quality of deaf students. Some specific suggestions for practitioners include:

First, instruction should have specific goals. One outcome of this project was that it forced teachers to focus on why they were teaching writing rather than on how they were teaching it. Because they knew that at the end of the project some evaluation would take place they were more concerned with regularly teaching writing. Further, writing as we said above is not a simple activity. As a complex task with many components that might be taught, there is a tendency on the part of teachers to either avoid teaching writing or to attempt to substitute other more manageable tasks for actual composing or instruction in composing. By giving teachers a specific instructional focus through curriculum goals or a regular testing program, instruction becomes more focussed.

Second, writing should take place as part of a comprehensive literacy program. The point of this project was to train teachers to teach writing as a process. What this implies is that writing was seen as one of several related literacy skills which all depend on the creation within the classroom of an environment that encourages reading and writing. Individuals who do not read, cannot write. To encourage writing, a general effort must be made to encourage literacy in general as part of a comprehensive view of the language learner.

References

Applebee, A.N. (1982) Writing and learning in school settings. In P.M. Nystrand (Ed.) What Writers Know: The Language, Process, and Structure of Written Discourse. New York: Academic Press.

Baxter, M. and Kwalick, B. (1984) Holism and the teaching of writing. New York: Scribner Educational Publishers. Research Report.

Benton, S.L. & Blohm, P.J. (1968) Effect of question type and position on measures of conceptual elaboration in writing. Research in the Teaching of English, 20(1), 98-108.

Daiute, C. (1986) Physical and cognitive factors in revising: Insights from studies with computers. Research in the Teaching of English, 29(2), 141-159.

Heider, F. & Heider, G. (1940) A comparison of sentence structure of deaf and hearing children. Psychological Monographs, 52(1), 42-103.

Hillocks, G. (1987) Synthesis of research on teaching writing. **Educational Leadership**, 44, 71-76.

Humes, A. (1983) Research on the composing process. **Review of Educational Research**. 53, 2, 201-216.

Kluwin, T. (1979) The effects of selected errors on the written discourse of deaf adolescents. Directions, 1(2), 46-53.

Knudson, R. E. (1988) The effects of highly structured versus less structured lessons on student writing. **Journal of Educational Research**, 81, 6, 365-368.

Livingston, S. (1989) Revision strategies of deaf student writers. **American Annals of the Deaf**, 21-26.

Mather, S. (1989) Visually oriented teaching strategies with deaf preschool children. In **The Sociolinguistics of the Deaf Community**. New York: Academic Press.

Moriarity, D. J. (1978) An investigation of the effects of instruction in five components of the writing process on the quality and syntactic complexity of students writing. Research Report. New York: Framingham State University.

Mullis, I. (1980) Using the primary trait system for evaluating writing. Princeton, NJ: Educational Testing Service.

Purves, A.C., Soter, A., Takala, S. & Vahapassi, A. (1984) Towards a domain-reverenced system for classifying composition assignments. Research in the Teaching of

English, 18(4), 385-416.

Stuckless, E., and J. Birch. (1966) The influence of early manual communication on the linguistic development of deaf children. American Annals of the Deaf, 111, 4, 425-460, 499-504.

Selfe, C. L. (1981) The composing processes of high and low writing apprehensives: A modified case study. Research Report: University of Texas.

Taylor, L. (1969) A language analysis of the writing of deaf children. Final Report. Tallahassee: Department of English, Florida State University.

Thompson, W. (1936) Analysis of errors in written composition by deaf children. American Annals of the Deaf, 81(2), 95-99.

Walter, J. (1955) A study of the written sentence construction of a group of profoundly deaf children. American Annals of the Deaf, 100, 3, 235-252.

TABLE 1

Comparison of Four Types of Student Participants

	Group 1 First Year Only (n=144)	Group 2 Second Year Only (n=101)	Group 3 Both Years /Different Teachers (n=79)	Group 4 Both Years /Same Teacher (n=102)
Age:				
mean	14.09	12.05	13.49	13.28
s.d.	3.01	2.70	2.86	2.60
Sex:				
% Female	49.7	56.6	48.1	55.9
Ethnicity:				
% minority	50.4	58.2	54.7	37.1
Hearing Loss:				
BEA mean	86.46	83.63	91.45	82.90
s.d.	19.29	21.07	19.58	19.72
Reading Level				
G.E.S	3.70	4.62	4.06	4.00
	2.32	3.82	2.46	2.27

Table 2
Stimulus Used

Grade Level	Descriptive Essay	Persuasive Essay	Business Letter
4 to 6	Imagine Something	Puppy Letter	Rock Poster
7 to 9	Describe Something	Principal's Letter	Rock Poster
10 to 12	Describe Something	Principal's Letter	Rock Poster

Table 3
Factor Scores for Pre-Test Essays

Pre-Test Measures	Factor 1	Factor 2
Persuasive words per clause	.27793	.64442
Descriptive words per clause	.78546	.15851
Persuasive words per t-unit	.18754	.93680
Descriptive words per t-unit	.92420	.14947
Persuasive ungrammatical clauses	.43511	.41432
Descriptive ungrammatical clauses	.53671	.26242

Persuasive clause per t-unit	-.03677	.73120
Descriptive clauses per t-unit	.58410	-.00271
Business grammatical score	.38576	.35767

Table 4
Business Letter Form and Content Factor Scores

Category	Factor 1	Factor 2	Factor 3
Internal address	.1753	.7316	.0123
Date	.0783	.7236	.1220
Greeting	.0838	.1553	.5898
Writer's name	.1430	.7774	.1396
Return address	.5227	.4030	.4642
Closing	.4829	.2327	.6200
Reference	.7912	.1061	.1690
Request	.6170	.2778	-.0884
Choice	.8204	.0282	.1035
Extraneous information	-.4622	-.2745	.5922

Table 5
Factor Loadings for Composite Quality Score

Pre-test Trait Score	Factor 1	Factor 2
Persuasive Holistic	.8586	-.0462
Descriptive Holistic	.8410	-.1053
Business Content Mastery	.6134	.1552
Business Form Mastery	.4126	-.6608
Business Social Mastery	.2916	.7404

Table 6

Results of Multiple Regression to Adjust Pre-Test Factor Scores

Composite Quality		Grammar Score	
Multiple R	.75404	Multiple R	.42984
R Square	.56858	R Square	.18476

---------- Variables in the Equation ----------

	Beta	Beta
Reading Ability	.523327	.363570
Hearing Loss	-.058712	-.056612
Gender	-.063039	.097993
Age	.323587	-.023243
Race	-.152126	-.126310

Table 7
Results of Multiple Regression to Adjust Post-test Factor Score

Composite Quality		Grammar Score	
Multiple R	.78151	Multiple R	.36924
R Square	.61076	R Square	.13634

---------- Variables in the Equation ----------

	Beta	Beta
Time between testing	.145366	-.051730
Hearing Loss	-.178118	.056755
Reading Ability	.568184	.31486
Gender	-.072790	.095681
Age	.272929	.014518
Race	-.184604	-.020443

Table 8
Repeated Measures Analysis of Variance

Source of Variation	SS	DF	MS	F	Sig of F
Tests of Between-Subjects Effects.					
EXPOSURE	.70	2	.35	.10	.904
Tests involving 'TIME' Within-Subject Effect.					
TIME	143.23	1	143.23	283.10	.000
EXPOSURE BY TIME	.32	2	.16	.31	.732
TEST	35.53	1	35.53	94.19	.000
EXPOSURE BY TEST	14.37	2	7.19	19.05	.000
EXPOSURE BY TIME BY TEST	8.36	2	4.18	117.82	.000

Figure 1
Use of Class Writing Time

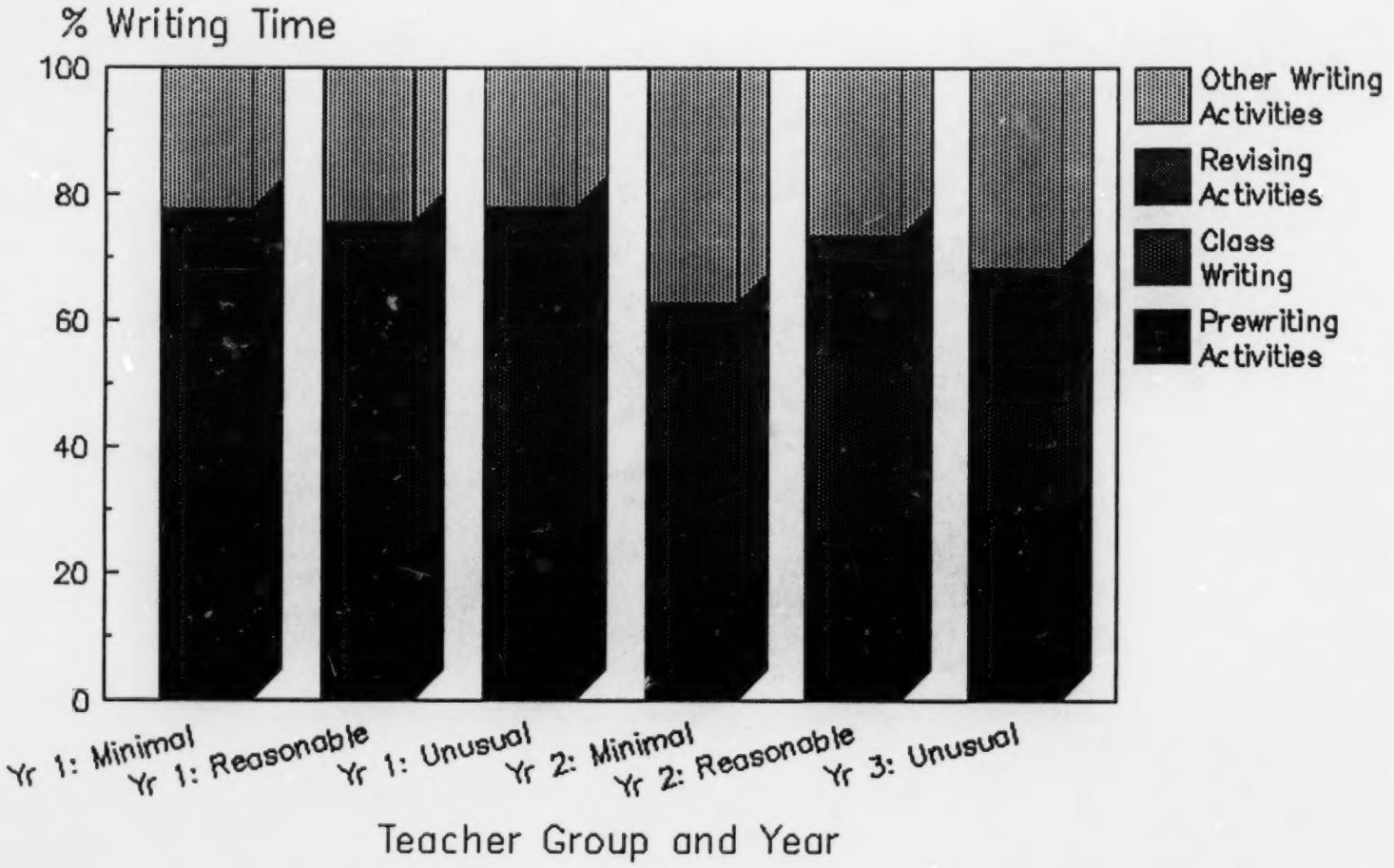
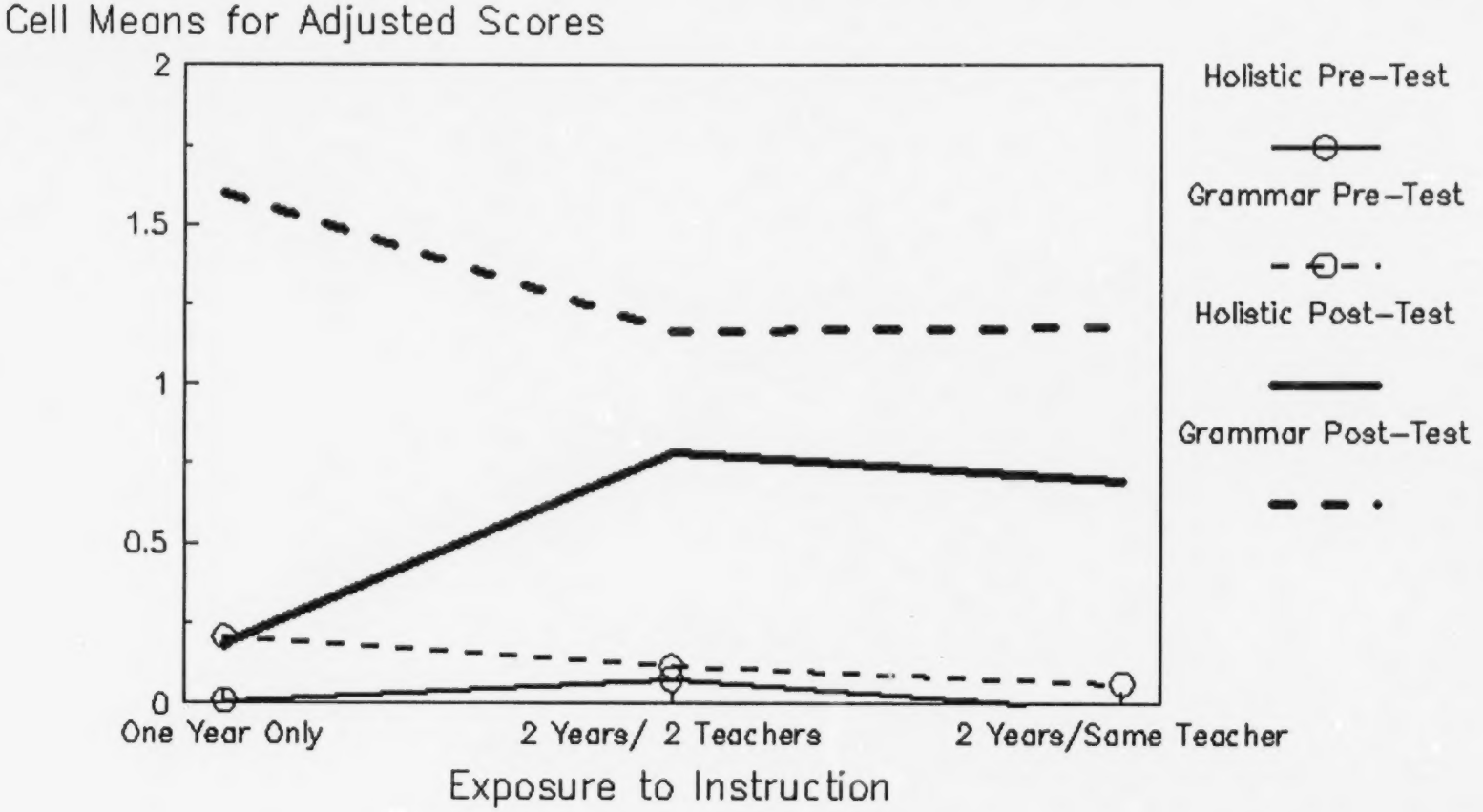


Figure 2
Adjusted Scores for
Composite Quality and Grammatical Complexity



APPENDIX

PRIMARY TRAIT SCORING GUIDE "GRAMMATICALITY"

6 Few if any errors.
Random errors, typos, etc.

5 Occasional run-on sentences or sentence fragments.
Very infrequent morphological errors.
Some word choice errors, i.e.: prepositions, idiomatic expressions.
Non-existent to minor mechanical faults, i.e.: comma faults or inappropriate end punctuation.

4 Some morphological errors.
Some word deletions, especially articles.
Some verb tense errors.
Some run-on sentences or sentence fragments.
Incorrect subordination.
Some word choice errors.
Possessive or plural punctuation missing.

3 Deleted prepositions and articles.
Frequent run-on sentences.
Inappropriate question formation.
Confusion of subordination and coordination.
Failure to mark plurality.
Some word choice errors.
Absence of end punctuation.
Other types of punctuation errors.

2 Many run-on sentences or sentence fragments.
Deletion of major sentence elements.
Frequent deletion of all morphological markers.
Frequent word choice errors, especially interchanging nouns and verbs.
Inversion of compound words or incomplete compound words.
Frequent capitalization errors.

1 Double or redundant use of words, i.e.: "our my"
Simple sentence types, or invariant or stereotypical sentence types.
Many incomprehensible sentence fragments.
Frequent deletion of major sentence elements.
Scrambled syntactic elements.
Very simple vocabulary choice.
Repeated words or phrases.
Many capitalization errors.

0 Blank

HOLISTIC SCORING GUIDE
"DESCRIBE SOMETHING"
NAEP AGE 13 CRITERIA MODIFIED FOR DEAF STUDENTS

Score of 6:
These papers chose a single object and describe it with concrete and clear language. They contain considerable detail and substance, originality of language, and some sense of structure. There may be a few minor mechanical problems, however with focus.

Score of 5:
These papers chose a single object and describe it clearly, but with less detail, originality, or focus than the "6" papers. There may be a little sense of organization, but the object should be individualized, and mechanical problems should be relatively minor (unless the paper is very strong). Errors would include occasional run-on sentences or sentence fragments, very infrequent morphological errors, and some word choice errors such as preposition usage or idiomatic expressions.

Score of 4:
These papers do describe something, but are generally thin, often very short and/or confused. Mechanical or grammatical errors include some morphological errors or word deletions, particularly articles, some verb tense errors, some run-on sentences or sentence fragments, some word choice errors, and missing possessive or plural markings.

Score of 3:
These papers do describe something, but the understanding is marred by serious grammatical or mechanical problems. Errors include the deletion of prepositions and articles, frequent run-on sentences, failure to mark plurality, frequent word choice errors, and inappropriate use of punctuation.

Score of 2:
Papers scored as "2" are very brief, non-descriptive, and confused. They contain serious errors in syntax, diction, and mechanics. Errors include many run-ons sentences or sentence fragments, some deletions of major sentence elements, frequent deletion of morphological markers, frequent word choice errors, frequent capitalization errors.

Score of 1:
These papers do not have an identifiable paragraph structure and may list sentences or words related to a topic. Simple sentence structures or incomprehensible sentence fragments, deletions of major sentence elements or other serious syntactic faults are present. Word choice is marked by very simple vocabulary and repeated word/phrases.

Score of 0:
No-response papers should be given to the Table Leader for further analysis/scoring.

TRAIT IDENTIFICATION SCHEME
"ROCK POSTER" BUSINESS LETTER

RATIONALE:

The stimulus requires respondents to clearly communicate the information necessary to explain the situation and obtain an appropriate response. The purpose of the scoring is to identify the elements essential to these goals.

FORM STRUCTURE:

In each column, write a "1" or "2" as appropriate. A "1"indicates a partial response according to the criteria below. A "2" indicates a complete response according to the criteria below. A "3" is reserved for special coding.

INTERNAL ADDRESS:
- Complete = 2
  - Mary Jones, Manager
  - National Book Store
- Partial = 1
  - Mary Jones
  - or Manager
  - or National Book Store

DATE:
- Complete = 2
  - Month, day, year
- Partial = 1
  - Any indication of a date.

GREETINGS:
- Complete = 2
  - Ms. Mary Jones
  - Manager
  - Miss: or Ms.:
- Partial = 1
  - Mary or Jones

WRITER'S NAME:
- Complete = 2
  - Chris Brown
  - Student's full name
- Partial = 1
  - Chris or Jones
  - Or Student's first or last name

ADDRESS:
- Complete = 2:
  - 37 Elm St.; Gulf, Ohio; 76453
  - Or Student's own home address
- Partial = 1:
  - Missing any information.

CLOSING:
- Complete = 2
  - Closing with name.
- Partial = 1
  - Closing expression only;
  - Name only
- Inconsistent signature = 3

CONTENT SCORING:

Score these with a "1" to indicate presence of the content.

REFERENCE: Refers to calendar,
- 1 = "I want a poster about C.L. Cool."
  - "Send me 'Mountains and Streams'."

CHOICE: States a choice.
- 1 = "I want a poster about C.L. Cool."
  - "Poster's name is Night Ranger."

EXTRANEOUS: Includes information unrelated to a business letter.
- 1 = "I like rock and roll."

REQUEST: Asks for a poster or calendar.
- 1 = "Send me the free poster calendar."